IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants:	Keren et al.	Attorney Docket No: 150824.04
Serial No:	09/770,767	Group Art Unit: 2621
Filed:	January 25, 2001	Examiner: Czekaj, David J.
Title:	MULTIMEDIA STREAM COMPRESSION	

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

  This is an appeal from an Office Action dated August 11, 2006, twice rejecting Claims 94-111 and 128-139. Appellants filed a timely Notice of Appeal on January 11, 2007.

  The jurisdiction of this board is invoked under the provisions of 35 U.S.C. § 134 and 37 C.F.R. Part 41.

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2 **1. REAL PARTY IN INTEREST**

3   The real party in interest in this appeal is hereby identified as Microsoft Corporation, since

4 all right and title in the invention and the patent application on appeal are owned by Microsoft

5 Corporation, as evidenced by a chain of title from the inventors in the patent application identified

6 above to the current assignee, as shown below.

7   1.   An assignment of all rights and title in the present patent application by inventors

8 **Avishai Keren, Meir Feder, and Ofir Paz** to **WebTV Networks, Inc**. The assignment was

9 recorded in the U.S. Patent and Trademark Office on April 4, 2001 at Reel 011792, Frame 0934.

10   2.   An assignment of all rights based on a merger WebTV Networks, Inc. to **Microsoft**

11 **Corporation**. The assignment was recorded in the U.S. Patent and Trademark Office on May 2,

12 2006, at Reel 017561, Frame 0603.

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2. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences are known to appellants that will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

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3. STATUS OF THE CLAIMS

Claims 94-111 and 128-139 are remain pending in the application on appeal, claims 1-93 and 112-127 having been previously canceled. No claims have been allowed. Claims 94-111 and 128-139 have been rejected under 35 U.S.C. § 103(a).

In the final office action dated August 11, 2006, claims 94-99 and 137 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,278,466 ("Chen") in view of U.S. Patent No. 6,195,692 ("Hsu"). Claims 100-101 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen and Hsu in further view of U.S. Patent No. 5,623,587 ("Bulman"). Claims 102-111 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen, Hsu, and Bulman in further view of U.S. Patent No. 6,175,663 ("Huang"). Claims 128-136 and 138-139 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen and Hsu in further view of U.S. Patent No. 6,445,874 ("Catlow").

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4.   STATUS OF THE AMENDMENTS

An Amendment and Reply dated May 16, 2006, was filed by the applicant after an interview with the examiner. A final Office Action was mailed on August 11, 2006. No further amendment has been filed.

A copy of the claims on appeal, including all amendments actually entered, is appended hereto.

5.   SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 94

Independent claim 94 recites a method in a server 16 (shown in Figs. 1 and 2) that provides remote client access (for example, remote client 11 in Fig. 1) to one or more computer programs 30 (shown in Fig. 2) in order to allow remote user interaction therewith. The method provides for generating a compressed video stream representing a display for the one or more computer programs by modifying elements of the display for efficient compression. See, for examples, the arrows labeled "compressed video" and "user control" in Fig. 1.

The method provides for generating display elements at a server, the display elements representing at least a portion of a display for a computer program running at the server, which is configured to receive remote interaction from a remote client. See the server 16 including programs 30 which generate display elements for a display and which is configured to receive interaction from a client 11. See Figs. 1 and 2 and its description in paragraph 147.

The method requires receiving, at the computer program, continuous user interaction via the remote client that changes one or more elements of the display for said executed computer program, wherein at least one of the display elements changed is an unmodified object. Examples of continuous user interaction is provided throughout the specification. For example, paragraph 170 describes the scrolling modification performed responsive to continuous user interaction. See also paragraph 173 which describes how the changes caused by user interaction are detected. Paragraph 191 also discloses that the method described with respect to Fig. 3 is performed responsive to change events which indicate to the image compressor that a change has occurred in an image of a display channel (i.e., a displayed image).

The method requires modifying at least said unmodified object to produce a modified object, wherein said modification is performed independently of said executed computer program in such a way that the modified object will be more efficiently converted to a compressed video stream than the unmodified object. Steps 50, 56, 58, 60, and 62 in Fig. 3 describe how each display element is

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modified so that modified object is more efficiently converted to a compressed video stream. Details of these method steps are provided, for example, in paragraphs 160, 163, 164, 166-173, and 181-183.

The method also requires generating a compressed video stream by converting at least the modified object into the compressed video stream for rendering at least a portion of said display of the executed computer program at a display device at the client for allowing a user interaction with the at least one of the display elements. Steps 66-70 in Fig. 3 and its description, for example, in paragraphs 181-187 describe how the compressed video stream is generated for rendering a portion of a display of a computer program 30 by converting a modified object into the compressed video stream.

Independent Claim 128

Independent claim 128 recites that in a server (server 16 in Figs. 1 and 2) that provides remote client (client 11 in Fig. 1) access to one or more computer programs 30 (in Fig. 2), a method is provided of determining when to generate a compressed video stream representing a display for the one or more computer programs by monitoring changes to the display. See, for examples, the arrows labeled "compressed video" and "user control" in Fig. 1.

The method includes executing a computer program 30 at a server 16 (see Fig. 2), wherein the execution of the computer program generates display objects from a set of display commands, the display objects are at least a portion of a display for said computer program. See Figs. 1 and 2 and its description in paragraph 147.

The method includes identifying changes of said display which are responsive to at least one type of continuous user interaction command received from a remote client. Examples of continuous user interaction is provided throughout the specification. For example, a paragraph 170 describes the scrolling modification performed responsive to continuous user interaction. See also paragraph 173 which describes how the changes caused by user interaction are detected. Paragraph 191 also discloses that the method described with respect to Fig. 3 is performed responsive to change

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events which indicate to the image compressor that a change has occurred in an image of a display channel (i.e., a displayed image).

The method includes determining whether the changes warrant an update to an image based at least in part on one or more of available bandwidth, available computing power, or type of user connection. See paragraph 191 which describes change detection based on available bandwidth, available computing power, and/or type of user connection which warrants an update to an image.

The method also requires that upon determining that the changes do warrant an update, processing the changes and converting said display commands into a compressed video stream, wherein said changes are inserted into said compressed video stream at an update frame rate corresponding to a priority assigned to other portions of the display that are unchanged and such that changes to said image are inserted into the compressed video stream at a faster rate than compressed data that does not include changes to said image. This feature is described generally with respect to the steps of Fig. 3 and especially in paragraphs 200-202 which describes how a higher priority may be accorded to change events related to user interaction in which modified objects corresponding to these change events may be inserted at a higher frame rate.

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6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. A determination as to whether to whether the examiner erred in rejecting: (a) claim 94-99 and 137 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,278,466 ("Chen") in view of U.S. Patent No. 6,195,692 ("Hsu"); (b) claims 100-101 under 35 U.S.C. § 103(a) as being unpatentable over Chen and Hsu in further view of U.S. Patent No. 5,623,587 ("Bulman"); (c) claims 102-111 under 35 U.S.C. § 103(a) as being unpatentable over Chen, Hsu, and Bulman in further view of U.S. Patent No. 6,175,663 ("Huang"); and (d) claims 132, 134-136, and 138 over Chen and Hsu in further view of U.S. Patent No. 6,445,874 ("Catlow").

II. A determination as to whether the examiner erred in rejecting Claims 128-131, 133, and 139 under 35 U.S.C. § 103(a) as being unpatentable over Chen and Hsu in further view of Catlow.

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7.   ARGUMENT

I.   THE EXAMINER ERRED IN REJECTING INDEPENDENT CLAIM 94 UNDER 35 U.S.C. § 103(a) BECAUSE THE CITED ART FAILS TO TEACH ALL OF THE CLAIMED FEATURES

CLAIM 94 IS PATENTABLE UNDER 35 U.S.C. § 103(a), BECAUSE THE CITED ART FAILS TO TEACH (a) CONTINUOUS USER INTERACTION WITH A COMPUTER PROGRAM AT A SERVER THAT GENERATES DISPLAY ELEMENTS WHERE (b) AN UNMODIFIED OBJECT IS MODIFIED AT THAT SERVER INDEPENDENT OF THE EXECUTED COMPUTER PROGRAM

Independent claim 94 recites, **in a server**,

generating display elements at a server, the display elements representing at least a portion of a display for a computer program running at the server, which is configured to receive remote interaction from a remote client;
receiving, at the computer program, continuous user interaction via the remote client that changes one or more elements of the display for said executed computer program, wherein at least one of the display elements changed is an unmodified object;
modifying at least said unmodified object to produce a modified object, wherein said modification is performed independently of said executed computer program in such a way that the modified object will be more efficiently converted to a compressed video stream than the unmodified object; and
generating a compressed video stream by converting at least said modified object into said compressed video stream for rendering at least a portion of said display of the executed computer program at a display device at the client for allowing a user interaction with the at least one of the display elements.

Therefore, claim 94 requires that display elements are generated by a computer program at a server where the computer program receives continuous user interaction from a remote client that changes one or more elements of the display of the executed computer program where one of the display elements changed is an unmodified object. The claim further requires, at that server, modifying an unmodified object to produce a modified object independently of the executed computer program. This combination of features is not taught by the applied prior art.

First, as acknowledged in the final rejection, Chen fails to disclose the continuous user interaction as claimed.

Second, Chen also does not disclose modifying an unmodified object at the server where the display elements are generated. Specifically, the office action states that Chen

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discloses modifying an object to more efficiently convert to a compressed stream in col. 5, lines 36-58 and col. 19, lines 10-35.

However, col. 5, lines 36-58 discloses <u>that any such modifications is performed by the server system 16 which is very different from the animation authoring system 12 which generates the display elements (elements of animation generated by the system of Chen)</u>. Likewise, in col. 19, lines 10-35, Chen discloses how the server system 16 controls aspects of how the animation data stream is delivered to the playback systems 18A-C. Nowhere does Chen teach or suggest that the modifying of an unmodified object be performed at the server where the current program (which generates the display objects) executes as required by independent claim 94.

To cure these deficiencies in Chen, the office action relies on Hsu. However, Hsu does not disclose anything with respect with respect to the *second* deficiency in Chen discussed above. Specifically, Hsu relates to presenting a user a set of links which is used to provide the user the internet content (such as a webpage) that is referenced by that link. See, for example, col. 8, lines 27-35 of Hsu. While Hsu discloses user interaction for an internet on-demand system on a television, it does not disclose any of the other features recited in independent claim 94.

Therefore, the alleged prior art of Chen, Hsu, Bulman, Huang, and Catlow—taken either individually or as a whole—does not disclose, suggest, or enable (among other things) generating display elements at a server, the display elements representing at least a portion of a display for a computer program running at the server, which is configured to receive remote interaction from a remote client, receiving, at the computer program, continuous user interaction via the remote client that changes one or more elements of the display for the executed computer program, wherein at least one of the display elements changed is an unmodified object, and modifying the unmodified object to produce a modified object, wherein the modification is performed independently of the executed computer program in such a way that the modified object will be more efficiently converted to a compressed video stream than the unmodified object.

Since several of the recited features in independent claim 94 are not disclosed or suggested by any of the applied prior art, the office action fails to make a *prima facie* case of obviousness with respect to the pending independent claim 94.

In this context it should be noted that The Patent Office (PTO) has the burden of proving each of the claimed features is shown by the prior art. An allegation that claimed subject matter is "obvious" (as here alleged) requires a positive, concrete teaching in the prior art, such as would lead a person skilled in the art to choose the claimed combination from among many that might be comprehended by broad prior art teachings. The PTO's review court has made it very clear that silence in a reference is hardly a substitute for clear and concrete evidence from which a conclusion of obviousness might justifiably flow. See, e.g., *Application of Burt*, 356 F.2d 115, 121 (CCPA 1966).

DEPENDENT CLAIMS 95-111, 132, and 134-138 ARE PATENTABLE FOR AT LEAST THE SAME REASONS AS THE INDEPENDENT CLAIM 94 ON WHICH THEY DIRECTLY OR INDIRECTLY DEPEND

In addition, these claims recite additional features which are also patentable when considered as a whole.

II.   THE EXAMINER ERRED IN REJECTING CLAIMS 128-131, 133, AND 139 UNDER 35 U.S.C. § 103(A) AS BEING UNPATENTABLE OVER CHEN AND HSU IN FURTHER VIEW OF CATLOW.

Independent claim 128 recites, **in a server**:

> executing a computer program at a server, wherein the execution of the computer program generates display objects from a set of display commands, the display objects are at least a portion of a display for said computer program;
> identifying changes of said display which are responsive to at least one type of continuous user interaction command received from a remote client
> determining whether said changes warrant an update to an image based at least in part on one or more of available bandwidth, available computing power, or type of user connection; and
> upon determining said changes do warrant an update, processing said changes and converting said display commands into a compressed video stream, wherein said changes are inserted into said compressed video stream at an update frame rate corresponding to a priority assigned to other portions of the display that are unchanged and such that changes to said image are inserted into the compressed video stream at a faster rate than compressed data that does not include changes to said image.

As discussed earlier herein with respect to claim 94, several of the features recited in claim 128 are not disclosed or suggested by the applied combination of Chen and Hsu. Specifically, nowhere does the combination of Chen or Hsu disclose or suggest (a) in a server, executing a

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computer program at a server, wherein the execution of the computer program generates display objects from a set of display commands, where the display objects are at least a portion of a display for said computer program, and (b) in that server, determining whether said changes warrant an update to an image based at least in part on one or more of available bandwidth, available computing power, or type of user connection.

This combination of features is not taught by the applied prior art.

First, as acknowledged in the final rejection, Chen fails to disclose the continuous user interaction as claimed.

Second, Chen also does not determining whether said changes (responsive to a user interaction) warrant an update to an image based at least in part on one or more of available bandwidth, available computing power, or type of user connection. Specifically, the office action states that Chen discloses modifying an object to more efficiently convert to a compressed stream in col. 5, lines 36-58 and col. 19, lines 10-35.

However, col. 5, lines 36-58 discloses that any such modifications is performed by the server system 16 which is very different from the animation authoring system 12 which generates the display elements (elements of animation generated by the system of Chen). Likewise, in col. 19, lines 10-35, Chen discloses how the server system 16 controls aspects of how the animation data stream is delivered to the playback systems 18A-C. Nowhere does Chen teach or suggest that the modifying of an unmodified object be performed at the server where the current program (which generates the display objects) executes as required by independent claim 94.

To cure these deficiencies in Chen, the office action relies on Hsu. However, Hsu does not disclose anything with respect with respect to the *second* deficiency in Chen discussed above. Specifically, Hsu relates to presenting a user a set of links which is used to provide the user the internet content (such as a webpage) that is referenced by that link. See, for example, col. 8, lines 27-35 of Hsu. While Hsu discloses user interaction for an internet on-demand system on a television, it does not disclose any of the other features recited in independent claim 128.

Third, the independent claim 128 recites wherein said changes to display commands are inserted into said compressed video stream at an update frame rate corresponding to a priority assigned to other portions of the display that are unchanged and such that changes to

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said image are inserted into the compressed video stream at a faster rate than compressed data that does not include changes to said image. The office action acknowledges that neither Chen nor Hsu disclose this feature but relies on Catlow.

However, Catlow discusses priority in the context of priority between clips which are defined as a continuous sequence of video frames. See col. 1, lines 14-16. Nowhere does Catlow disclose anything related to the claimed automated changing of priority to a changed display command so that an update frame of the changes is inserted at a frame rate that is faster than compressed data that does not include such changes. Accordingly, this feature is also not disclosed by the applied prior art and provides an additional reason for the patentability of independent claim 128.

Accordingly, since several of the claimed features are not disclosed or suggested by the applied prior art, the office action fails to make a *prima facie* case of obviousness with respect to independent claim 128.

DEPENDENT CLAIMS 129-131, 133, AND 139 ARE PATENTABLE FOR AT LEAST THE SAME REASONS AS THE INDEPENDENT CLAIM 128 ON WHICH THEY DIRECTLY OR INDIRECTLY DEPEND

In addition, these claims recite additional features which are also patentable when considered as a whole.

CONCLUSION

Appellants therefore respectfully request that the Board of Patent Appeals and Interferences overrule the Examiner's rejection of the claims and require that the Examiner pass this case to issue without further delay.

Respectfully submitted,

Dated: <u>April 9, 2007</u>   By: <u>/Aaron.C. Chatterjee/</u>

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CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence and the documents identified on this form are being electronically deposited with the USPTO via EFS-Web on the date shown below:

<u> April 9, 2007 </u>   <u> /Kate Marochkina/ </u>
  Date   Kate Marochkina

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8. CLAIMS APPENDIX

A copy of the claims on appeal

94.   In a server that provides remote client access to one or more computer programs in order to allow remote user interaction therewith, a method of generating a compressed video stream representing a display for the one or more computer programs by modifying elements of the display for efficient compression, the method comprising:

generating display elements at a server, the display elements representing at least a portion of a display for a computer program running at the server, which is configured to receive remote interaction from a remote client;

receiving, at the computer program, continuous user interaction via the remote client that changes one or more elements of the display for said executed computer program, wherein at least one of the display elements changed is an unmodified object;

modifying at least said unmodified object to produce a modified object, wherein said modification is performed independently of said executed computer program in such a way that the modified object will be more efficiently converted to a compressed video stream than the unmodified object; and

generating a compressed video stream by converting at least said modified object into said compressed video stream for rendering at least a portion of said display of the executed computer program at a display device at the client for allowing a user interaction with the at least one of the display elements.

95.   A method according to claim 94, wherein said modifying comprises modifying said unmodified object responsive to limitations of said display device on which said compressed video stream is to be displayed.

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96.   A method according to claim 94, wherein modifying comprises modifying said unmodified object to reduce bandwidth requirements of said compressed video stream.

97.   A method according to claim 94, wherein modifying comprises modifying said unmodified object to reduce resource requirements for compressing said compressed video stream.

98.   A method according to claim 94, wherein said modifying comprises changing said unmodified object such that the unmodified object is moved relative to its original display position.

99.   A method according to claim 98, wherein said compressed video stream utilizes blocks having boundaries and wherein moving comprises moving said unmodified object to match at least one compression block boundary.

100.   A method according to claim 94, wherein said modifying comprises replacing said unmodified object with a different object to produce said modified object.

101.   A method according to claim 100, wherein replacing said unmodified object comprises replacing said unmodified object with a compressed representation of said different object.

102.   A method according to claim 100, wherein said unmodified object comprises a text object.

103.   A method according to claim 100, wherein said unmodified object comprises a background of said display.

104.   A method according to claim 100, comprising analyzing said unmodified object to determine a closest suitable replacement object for producing said modified object.

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105.   A method according to claim 94, wherein modifying said unmodified object comprises changing a font definition for said unmodified object.

106.   A method according to claim 94, wherein modifying said unmodified object comprises modifying at least one color of said unmodified object.

107.   A method according to claim 106, wherein modifying a color composes reducing a spatial resolution of said colors.

108.   A method according to claim 106, wherein modifying a color composes reducing a color range resolution of said colors.

109.   A method according to claim 94, wherein modifying said unmodified object comprises reducing a spatial resolution of said unmodified object.

110.   A method according to claim 94, wherein said unmodified object comprises a scrolling command and wherein said modifying comprises increasing a granularity of said scrolling.

111.   A method according to claim 110, wherein said increasing a granularity comprises limiting said scrolling command to multiples of compression blocks size of said compressed stream.

128.   In a server that provides remote client access to one or more computer programs, a method of determining when to generate a compressed video stream representing a display for the one or more computer programs by monitoring changes to the display, the method comprising:

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executing a computer program at a server, wherein the execution of the computer program generates display objects from a set of display commands, the display objects are at least a portion of a display for said computer program;

identifying changes of said display which are responsive to at least one type of continuous user interaction command received from a remote client

determining whether said changes warrant an update to an image based at least in part on one or more of available bandwidth, available computing power, or type of user connection; and

upon determining said changes do warrant an update, processing said changes and converting said display commands into a compressed video stream, wherein said changes are inserted into said compressed video stream at an update frame rate corresponding to a priority assigned to other portions of the display that are unchanged and such that changes to said image are inserted into the compressed video stream at a faster rate than compressed data that does not include changes to said image.

129. A method according to claim 128, wherein said type of user command comprises a pointing device command.

130. A method according to claim 128, wherein said changes comprises an indication of a selection of a GUI (graphical user interface) element.

131. A method according to claim 128, comprising analyzing said user command to determine display commands which effect said identified changes.

132. A method as recited in claim 94, wherein the compressed video stream is generated without first generating a display raster of at least the unmodified object.

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133.   A method as recited in claim 128, wherein the display commands are directly converted into the compressed video stream without first generating a display raster of the display commands.

134.   The method of claim 94, wherein the modification is performed in such a way that the modified object will be converted to compressed video faster than the unmodified object.

135.   The method of claim 94, wherein the modification includes replacing an object of the display, and wherein the replacement is based on the type of the object.

136.   The method of claim 94, wherein generating display object comprises generating display commands, wherein modifying comprises changing at least one of the display commands, and wherein the compressed video includes the at least one of the display commands after it is modified without first being rendered at the server.

137.   The method of claim 94, wherein the unmodified object is modified to produce the modified object by one or more of: adjusting a cursor flashing rate so that a lower frame rate is required; adjusting the colors of the unmodified object so that the compression of a color component is more efficient; or moving the unmodified object so as to not straddle compression-block boundaries.

138.   The method of claim 94, wherein the unmodified object is a display background, which is modified to produce the modified object by replacing the display background to simplify compression or to utilize a pre-compressed background.

139.   The method of claim 128, wherein only changed portions of the image are processed and a new output frame is assembled that includes both newly compressed image portions and unchanged compressed image portions.

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9. EVIDENCE APPENDIX

Appendix Listing

None

1   **10.   RELATED PROCEEDINGS APPENDIX**

2   <u>Appendix Listing</u>

3   None

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